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ABSTRACT

A study was done to determine the significant relationships among teacher conceptual systems, student conceptual systems, and student perceptions of the classroom educational environment in selected elementary schools. Tested was the general hypothesis that students would be more involved with teachers they perceived as being less authoritarian and rigid than they would be with teachers who exhibited the same characteristics to a greater extent. Subjects consisted of 1,180 fifth and sixth grade students and 52 teachers selected from 12 sample schools. Student perceptions of classroom environment were measured by the Elementary School Environment Survey. Teacher conceptual systems were measured by student responses on the Student Self-Conception Test. Results indicated that there is a significant relationship between student/teacher conceptual system similarity and positive student perceptions of the classroom environment. (JB)

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CONCEPTUAL SYSTEMS AND EDUCATIONAL ENVIRONMENT: RELATIONSHIPS BETWEEN TEACHER CONCEPTUAL SYSTEMS, STUDENT CONCEPTUAL SYSTEMS, AND CLASSROOM ENVIRONMENT AS PERCEIVED BY FIFTH AND SIXTH GRADE STUDENTS

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One of the most important tasks facing educators is the creation of nurturing learning environments for all children. In elementary school classrooms throughout the country children continue to experience underachievement and failure, while educators continue to ignore variations in the educational environments that contribute to these conditions. Similarly, although there is considerable evidence (Bloom, 1968; Cronbach, 1967; Gagne, 1967) that no single educational environment provides optimal learning for all students, most classrooms remain environmentally monolithic. Finally, in spite of the evidence (McLachlan, 1969; Tomlinson, 1969; Hunt, 1971; Harvey, 1970) suggesting that educators should carefully match students, teachers, and educational environments to foster student intellectual growth and achievement, this matching is determined largely by chance in most schools.

Much of the related research in the field is similarly mindless. Despite considerable evidence (Bloom, 1964) of the impact of early environment on the development of human characteristics, little attention has been given to the identification of such controlling environmental variables in schools. Although Murray (1938) has indicated the importance of the individual's own interpretation of environmental phenomena that he perceives (Beta press) in influencing ones behavior, student perceptions are rarely utilized in measuring the environment. The most frequently used methods for measuring classroom environments, those of Withall (1949), Flanders (1965), and Medley and Mitzel (1958), utilize the perceptions of outside observers, thus providing a measure of Alpha press. Additionally, major studies concerning the matching of students, teachers, and environments continue to go virtually unnoticed. The most recent edition of the authoritative Encyclopedia of Educational Research (Ebel, 1969) fails to include any reference to such studies and in a recent AERA overview of research on teacher education (Smith, 1971), Robert Peck wrote: "The only discoverable

study ever conducted which tackled the complex interaction of different teacher types with different pupil types was done by Heil and Washburne (1962)," thus ignoring the work of Harvey, and Hunt, and their associates.

Nevertheless, a number of contemporary educators are inquiring into these problems and beginning to suggest possible solutions. Sinclair (1968, 1971), Sadker (1971), Bender (1971), and McKay (1971) have provided valuable data concerning elementary school educational environments as perceived by students. Bloom (1968), Cronbach (1967), and Gagne (1967), have focused their research and development efforts upon educational programs designed to meet the different needs of individual children within the same classroom. Hunt and his associates (1971), focusing on the relationship between teacher conceptual systems, student conceptual systems, and classroom environments, have worked to develop multiple environments for learning within the same school, and in training teachers to develop the skills needed to radiate a wide variety of environments.

A comprehensive approach to the problem has been suggested by Joyce (1972). The great challenge of the future, according to Joyce (p. 170) is to "develop entirely new modes of education, designed to help people create new solutions to problems, and to define problems that were not perceived before at all." To meet this challenge, he calls for (pp. 186-187) the creation of pluralistic schools and classrooms and for the creation of "an array of environments, each serving students in a particular kind of way."

In summary, the task of measuring achievement and decreasing failure among elementary school children is an important one. The separate studies of Sinclair, Bloom, Hunt, and their associates represent significant efforts to deal with this task. Finally, the approach to the problem suggested by Joyce represents one viable alternative.

The present study began with the assumption that in answering the question "Education for what?" we should give major attention to developing multi-faceted educational environments designed to meet the diverse needs of individual learners. Further this study assumed that in order to develop these environments and to match students, teachers, and environments, requires continued inquiry into the nature of classroom educational environments and into the relationship between teacher characteristics, student characteristics, and classroom educational environments. This study attempted to contribute to understanding the relationships among these important dimensions of schooling by providing some answers to the following questions:

1. What is the relationship between teacher conceptual systems and student perceptions of the classroom educational environment?

2. What is the relationship between teacher conceptual systems and teacher ability to radiate a wide variety of educational environments?

3. What is the relationship between teacher-student conceptual system similarity or dissimilarity and student perceptions of the classroom educational environment?

The purpose of this study, conceived in response to these questions, was to determine significant relationships between teacher conceptual systems, student conceptual systems, and student perceptions of the classroom educational environment in selected elementary schools.

Meaning of Major Variables:

The three major variables measured in the present study are classroom educational environment, teacher conceptual systems, and student conceptual systems. The definition of these major variables include a number of subfactors. The meanings of the variables are described below.

Classroom educational environment - Educational environment is defined as "the conditions, forces, and external stimuli which exert an influence on the individual. The environment is conceived to be a complex system of

situational determinants fostering the development of individual characteristics. The determinants may be factors of social, physical, and intellectual significance." This conceptualization of environment, developed by Sinclair (1971, p. 3), is based on an earlier assumption by Murray (1938) that behavior is a function of a transactional relationship between the individual and his environment.

Building on this rationale, Sinclair (1968) defined and measured five environmental variables that exist and differentiate among elementary schools: practicality, community, awareness, propriety, and scholarship, and developed the Elementary School Environment Survey (ESES) to measure the manifestations of each variable in elementary schools. Sadker (1971) cooperating with Sinclair in a study of educational environments, further refined the meaning of educational environment, and replaced Sinclair's factors with six new factors: alienation, humanism, autonomy, morale, opportunism, and resources. The two negatively described factors, alienation and opportunism, were changed to involvement and equity in the present study in order to provide a positive thrust for all factors. The environmental conditions and happenings included in the definition are manifest in the following descriptions:

1. Involvement

> Environments which score high on this factor reflect the presence of a student body which feels involved in classroom activities. A sense of belonging is buttressed by a concern for students. Students demonstrate their involvement by internalizing class objectives in such areas as academic pursuits and obedience to classroom rules and regulations. The atmosphere is congenial and there is a cohesiveness and a sense of togetherness in this climate.

2. Humanism

> The items in this factor reflect a concern for the value of the individual. It is a supportive climate and is marked by courtesy.

In addition, this value placed on the individual is carried over to his personal acts of expression, specifically aesthetic expression. This climate demonstrates a concern for creativity, and it is supportive of poetry, music, painting, and theatre.

3. Autonomy

A high score on this factor suggests an environment which supports and encourages student independence. This climate suggests student initiative as well as autonomy. Emphasis on procedures and supervision are minimized. Self-direction rather than obedience to rules of protocol is important. Individual differences, both in opinion academic interests, are stressed. Another aspect of this environment is that the lines of communication between learners and teachers are open and candid.

4. Morale

The statements in this factor relate to student attitudes towards the classroom. A high score on this factor indicates a friendly and cheerful classroom environment. The environment may be described as a happy one in which learners and teachers have a warm relationship.

5. Equity

The items in this factor reflext the degree of equity versus opportunism in the environment. A high score on this factor suggests a climate in which individuals are treated equally and do not gain socially or academically through preferred treatment.

6. Resources

The items in this factor reflect the number of optional learning opportunities available to and initiated for the students. The emphasis here is on the availability of in-class as well as extra-class resources. Included in this category are such resources as written materials, field trips, television, exhibits and music. The availability or friendliness of the teacher as a supporting service for learning is also included in this dimension. Classrooms which score high on this factor offer a wide variety of learning opportunities to learners.

(Sadker, 1971)

Conceptual Systems - Conceptual system is defined (Harvey, Hunt, and Schroder, 1961, pp. 244-245) as a "schema that provides the basis by which the individual relates to the environmental events he experiences."

Amplifying this, Hunt (1971, p. 18) indicates that, "a system characterizes the organizational structure through which a person processes information or 'reads' events. . . . Systems also have an important interpersonal component in that they characterize the form of self-other relatedness or interpersonal orientation: how the person conceptualizes himself, others, and the relationship between himself and others."

The work of O. J. Harvey, a primary referent in this study, is derived from the initial work of Harvey, Hunt, and Schroder (1961), and has concentrated on four conceptual systems. These systems, utlized in the present study, are defined by Harvey (1971) as:

System I

> This system, the most concrete mode of construing and responding to the world, is manifest in such characteristics as: high absolutism and closedness of thought and belief; high evaluativeness; high positive dependence on, or cathexis with representatives of institutional authority; high identification with social roles and status positions; high conventionality; and high ethnocentrism or strong beliefs in American superiority. Except in response to guides from formal or institutional authority, System I individuals appear to rely upon their own internal standards to a greater extent than representatives of the other systems. . . It is thought, however, that System I individuals, more than representatives of the other systems. . ., maintain their measure of independence from non-authority cues through conceptual closedness and contrast, which tend to prevent potentially conflicting inputs from entering their conceptual or interpretative matrix.

System II

> This system, immediately above System I in abstractness, is manifest in individuals who are distrustful of authority cues but at the same time are devoid of any other reliable and stable guidelines. They, more than persons of any of the other systems, seem to be in a psychological vacuum, guided more by distrust of and rebellion against the perceived social pressures than by positive adherence to personally-derived standards. Though representatives of this system tend to display negative valence toward the same referents that are of positive relevance to System I individuals, it is important to note that both use these same external sources as points of reference.

System III

This system, the next to highest in level of abstractness, is manifest in individuals with generally inflated notions of themselves as casual agents in effecting desired outcomes in their worlds. While attributing greater causality to themselves than do individuals from Systems I and II, the representatives of System III. . .develop at the same time a more generalized dependency upon others than do persons from any of the other systems. With the exception of the conformity of System I individuals to authority-related cues, System III representatives are thought to be the most acquiescent to conflicting opinions from the generalized "other." They appear to need constant feedback from significant people in their environment in order to regulate their behavior and attain the acceptance and mutual dependency they need.

System IV

This system, the more abstract end of the continuum, is manifest in individuals who have highly differentiated and integrated conceptual systems and, consequently, are more information and task oriented, more relative in thought and action, more open and sensitive to minimal cues in the environment, but at the same time more reliant upon their own opinions and perceptions as valid criteria for decision and action than are persons of the other systems. Faced with new or deviant input, System IV individuals appear more capable of admitting the impingements into their cognitive matrix, of examining and entertaining them, and of accepting or rejecting them in terms of consonance with their own standards than persons from other systems. Such individuals, therefore, are neither indiscriminate yielders to, nor invariant rebels against the prescriptions and suggestions preceived as coming from authority. They display a low need for structure, relatively high tolerance for ambiguity, an ability to differentiate between means and ends, an ability to articulate several ways of attaining the same goal, a capacity to "act as of," a high ability to change set and a tendency to avoid stereotype in solving problems.

Hypotheses:

Available literature concerning the major variables was examined as a means of delineating those relationships for which a theoretical base existed and/or which were most consistent with available empirical findings. The following hypotheses were formulated through a search of the literature and a process of logical deduction.

H_1: There will be significantly higher scores for Involvement in the classroom educational environment of System III and System IV teachers than in the classroom educational environment of System I teachers.

H_2: There will be significantly higher scores for Autonomy in the classroom educational environment of System III and System IV teachers than in the classroom educational environment of System I teachers.

H_3: There will be a significantly higher number of total positive responses across environmental variables in the classrooms of System IV teachers than in the classrooms of System I, System II, and System III teachers.

H_4: There will be a significantly higher number of total positive responses across environmental variables by those students whose conceptual systems are similar to their teacher's than by those students whose conceptual systems are dissimilar to their teacher's.

Method:

The intention of the investigator was to select classrooms representing diverse population clusters, settings, and demographic conditions so that a characterization could be made of the larger elementary school population. A total of 1,180 fifth and sixth grade students and 52 teachers in twelve different selected schools comprised the sample. The diverse characteristics included a range of per-pupil annual school expenditure from $572 to $937, a school enrollment range of 116 to 624, variation in classroom sizes from 6 to 31 students, and classrooms from city, suburban, and urban communities. The students and teachers had been together for eight months.

Instrumentation: Student perceptions of the classroom educational environment were measured by the Elementary School Environment Survey (ESES) (Sinclair, 1968; Sadker, 1971), a forty-two item survey of conditions, behaviors, or feelings about the educational environment. As noted earlier, student responses are separated along six factors: Involvement, Humanism, Morale, Autonomy, Equity and Resources. Teacher conceptual systems were

measured by student responses on the Student Self-Conception Test, an eighteen item self-report inventory (Harvey, 1970b), with most students classified into one of four categories. These categories, which are believed to be the behavioral correlates of the four conceptual systems, are: Need for Structure (System I), Hostility (System II), Sociability (System III) and Independence (System IV).

Results:

The first three hypotheses were tested by first dividing the students into four groups based on their teacher's conceptual systems. Thus, if a teacher was designed as System I, all students in the corresponding class were placed in the System I group. Student responses on the ESES were then used to obtain mean scores and standard deviations for each of the six environmental variables and for the total positive or "correct" responses within each of the four groups. An F-test was performed on each of the environmental variables and on the total positive responses on the ESES to determine whether significant differences existed between the four groups. These results are reported in Table 1. Where the F ratios were significant, the Neuman-Keuls procedure was used to compare pairs of groups in order to determine the specific significant differences.

The results of the analysis of variance did not support the first hypothesis. These results showed no significant differences for Involvement in the classroom educational environment between teachers with conceptual systems I, II, III, or IV.

The second hypothesis was supported. The F test results showed a significant difference ($p < .001$) for Autonomy in the classroom environments of teachers with varied conceptual systems. Post hoc contrasts were then

Table 1

Means, Standard Deviations, and F Ratios for Environment Variables in Classrooms of Teachers with Each of the Conceptual Systems

Environmental Factors	System I (n=664)		System II (n=79)		System III (n=176)		System IV (n=262)		F Ratios
	M	SD	M	SD	M	SD	M	SD	
1. Involvement	4.05	1.57	4.12	1.17	4.04	1.38	4.08	1.39	.0832
2. Humanism	3.15	1.45	3.27	1.16	3.15	1.36	3.33	1.30	1.2569
3. Autonomy	3.09	1.33	3.23	1.44	3.39	1.21	3.56	1.35	7.5308***
4. Morale	3.31	1.52	2.94	1.23	3.14	1.37	3.36	1.51	2.6719*
5. Equity	3.50	1.10	3.32	.98	3.36	1.08	3.53	1.17	1.6241
6. Resources	2.29	1.18	2.11	1.20	2.40	1.30	2.41	1.14	1.6717
7. Total Positive Responses	19.40	4.45	18.99	3.52	19.60	4.54	20.07	4.05	2.0030

* $p < .05$
** $p < .01$
*** $p < .001$

No Asterisk: $p < .05$

performed on all pairs of mean for the variable of Autonomy using the Neuman-Keuls procedure. As indicated by Hays (1963, p. 483) this type of post hoc comparison "is applicable only to the situation where a preliminary analysis of variance and F test has shown over-all significance." An implicit assumption in the Neuman-Keuls procedure is equal sample sizes. Because the treated groups (Systems I, II, III, and IV) in the present study were unequal in size it was felt that an acceptable approach was to use the mean for the total sample, 295 (Winer, 1962). The basic results for this procedure as applied to the variable of Autonomy are summarized in Table 2.

The results of this analysis show that the classrooms of System III teachers ($p < .01$) and System IV teachers ($p < .05$) scored significantly higher in Autonomy than the classrooms of System I teachers. Thus, the second hypothesis was supported. Additionally, significant differences were found between the classrooms of System III and System II teachers ($p < .01$) and between System III and System IV teachers ($p < .05$), with System III teachers scoring significantly higher in Autonomy in both cases.

An additional test was employed to provide an estimate of the strength of the relationship between System I teachers and Autonomy in the classroom educational environment and between System III teachers and Autonomy in the classroom educational environment. As Hays (1963, p. 322) indicates, "a significant result leads to the inference that some association exists, but in no sense does this mean that an important degree of association necessarily exists." To arrive at a more accurate measure of the relationship between the variables, Hays (p. 325) suggests that the researcher determine the <u>proportion of the variance in one accounted for by the other</u> or the <u>omega value squared (ω^2)</u>. As Hays states (p. 328), "it seems far more reasonable to

Table 2

Neuman-Keuls Test of Differences in Classroom Autonomy for Teachers with Each of the Four Conceptual Systems

Systems	Means	Differences Between Means
System I	3.0904	
System II	3.2278	.1374
System I	3.0904	
System III	3.5909	.5005**
System I	3.0904	
System IV	3.3626	.2722*
System II	3.2278	
System III	3.5909	.3631**
System II	3.2278	
System IV	3.3626	.1348
System III	3.5909	
System IV	3.3626	.2583*

*p < .05
**p < .01

follow up a finding that is both significant and indicates a strong degree of association than to tie this course of action to significance level alone."

Thus, to obtain an estimate of the degree of association between System I teachers and Autonomy, and between System III teachers and Autonomy, the value of ω^2 was calculated for those pairs of groups where significant differences existed. The results indicate that teacher conceptual systems I and III each accounted for less than 2 per cent of the variance in Autonomy in the classroom educational environment.

The third hypothesis was not supported. The mean number of total positive responses in the classrooms of System IV teachers was higher than the mean for classrooms of each of the other groups of teachers, suggesting a trend consistent with the hypothesis. However, the magnitude of the differences was not significant.

Although no hypothesis was advanced regarding the variable of Morale, the finding of significant differences for this variable suggested the value of further investigation of the relationship between teacher conceptual systems and Morale in the classroom educational environment. To this end, post hoc comparisons were performed on all pairs of means using the Neuman-Keuls test. The results of this analysis are provided in Table 3. Additionally, to determine the degree of association between variables, the value of ω^2 was calculated for those pairs of groups where significant differences had been discovered.

The results of the Neuman-Keuls test indicate that the classrooms of System II teachers scored significantly lower in Morale ($p < .01$) than the classrooms of System I and System IV teachers. System II teachers also scored lower than System III teachers, although the magnitude of the difference was not significant. However, the estimated ω^2 values indicate

Table 3

Neuman-Keuls Test of Differences in Classroom Morale for Teachers with Each of the Four Conceptual Systems

Systems	Means	Differences Between Means
System I	3.3148	
System II	2.9367	.3781**
System I	3.3148	
System III	3.1364	.1784
System I	3.3148	
System IV	3.3626	.0478
System II	2.9367	
System III	3.1364	.1997
System II	2.9367	
System IV	3.3626	.4259**
System III	3.1364	
System IV	3.3626	.2362

**p < .01

that only a small degree of association, 1 to 2 per cent, exists between System II teachers and Morale.

The fourth hypothesis was tested by first examining the scores for each student on the Student Self-Conception Test and determining whether that student was similar or dissimilar to the teacher in conceptual system. The behavioral correlates of conceptual systems obtained fron the SSCT were compared with the results for the teacher on the TIB to make that determination. Thus, for example, if the teacher in the class was classified as System I, a student scoring highest in Need for Structure (System I) was considered similar and a student scoring highest in Independence (System IV) was considered dissimilar. Only those who were clearly similar or dissimilar to the teacher were included in the testing of the hypothesis. Individual students who scored high on two disparate categories such as Need for Structure (System I) and Independence (System IV) were not included, nor were students who scored below the cut-off points in all categories. Using this system, two relatively extreme groups of 200 and 178 students were created and were used to test the hypothesis.

The responses on the Elementary School Environment Survey for each of these two groups were then analyzed. Means and standard deviation for each variable and for total positive responses were calculated. An F test was then used to determine if the responses of the two groups were significantly different. Finally, where significant differences existed, the value of ω^2 was calculated to provide an estimate of the degree of association between teacher and student conceptual system match or mismatch and student perceptions of the classroom environment. The results of these procedures are presented in Table 4.

Table 4

F Ratios and ω^2 Values for Environment Variables in the Groups of Students Similar and Dissimilar to the Teacher in Conceptual System

Environment Variables	Similar (n=200)		Dissimilar (n=178)		F Ratios	ω^2 Values
	Mean	SD	Mean	SD		
1. Involvement	4.5850	1.2125	3.5730	1.4873	53.0097***	.116
2. Humanism	3.5650	1.2822	2.7416	1.2758	39.0240***	.092
3. Autonomy	3.3450	1.3584	3.1517	1.3632	1.9011	
4. Morale	3.6800	1.2985	2.9888	1.4575	23.7804***	.064
5. Equity	3.6750	.9655	3.2809	1.0360	14.6342***	.034
6. Resources	2.6250	1.2048	2.2135	1.2071	10.9679***	.021
7. Total Positive Responses	21.4750	3.3714	17.9494	4.0159	86.0273***	.193

*** $p < .001$

The results of the analysis of variance provided sufficient evidence to accept the fourth hypothesis. These results showed that those students whose conceptual systems were similar to the teacher's recorded a significantly greater number of total positive responses across environment variables ($p < .001$) than those students whose conceptual systems were dissimilar to the teacher's. Additionally, the results of the ω^2 procedure indicated that the match or mismatch between student and teacher conceptual systems accounts for approximately 19 per cent of the variance in student perceptions of the classroom educational environment.

An examination of the results of the analysis of variance also revealed significant differences at the .001 level between the similar and dissimilar groups for the variables of Involvement, Humanism, Morale, and Equity, and significant differences at the .01 level for the variable of Resources. There were no significant differences between the two groups for Autonomy. The results of the ω^2 procedure indicate that the match or mismatch between student and teacher conceptual systems accounts for approximately 12 per cent of the variance in student perceptions of Involvement in the classroom educational environment, approximately 9 per cent of the variance in perceptions of Morale, and less than 4 per cent of the variance in perceptions of both Equity and Resources.

Discussion

The inquiry into the relationship between teacher conceptual systems and classroom educational environment provided evidence of a significant positive relationship between System III teachers and students' reporting Autonomy in the classroom educational environment and a significant negative relationship between System I teachers and Autonomy.

These findings are similar to those obtained by Harvey and his associates (1966, 1968) using outside observers to measure the behavior of teachers and students, and by Harvey and Prather (Harvey, 1970) using student ratings of teachers. The finding that the classrooms of System III teachers had significantly greater Autonomy than the classrooms of System IV teachers supported a theoretical description of System III and System IV teachers by Murphy and Brown (1970). It differed, however, from the early Harvey study (1966) in which outside observers did not find significant differences between System III and System IV teachers for the dimensions: enlistment of student participation, encourage individual responsibility, and need for structure. One possible conclusion is that while children in the classrooms of System III teachers do perceive greater Autonomy, outside observers do not.

More important, perhaps, these findings suggest that teachers whose conceptual systems are characterized by relative closedness, concreteness, and simplicity of thought are more likely to contribute to the structuring of relatively teacher-centered and non-autonomous classroom environments. Similarly, the findings suggest that teachers whose conceptual systems are characterized by both relative openness and abstractness of thought and an emphasis on mutual dependency with others are more likely to foster classroom environments which encourage student independence and initiative, have more open communication, and place less emphasis on supervision and obedience to rules of protocol. Although further experimental research is needed to ascertain a definite cause and effect relationship, the present study does provide further evidence that such a relationship might exist.

A significant difference was also discovered between the scores for Morale across the classrooms of System II teachers and both System I and

System IV teachers, with System II teachers scoring significantly lower. Although this finding is delimited by the small number of students (n=79) in the classes of System II teachers, it suggests that teachers whose conceptual systems are characterized by a high degree of distrust of and rebellion against societal norms may radiate classroom behavior which fosters an environment characterized by a negative student attitude towards the class, poor relations between learners and teachers, and disruptive student behavior. If, as theorized by Murphy and Brown, System II teachers do display greater rebelliousness in the classroom, the present findings may indicate that such a behavior on the part of the teacher encourages similar behavior among the students.

The failure to find any significant differences for Involvement across the classrooms of the four different groups of teachers was contrary to one of the major hypotheses. One possible explanation lies in the formulation of the hypothesis. This formulation was based, in part, on the earlier Harvey studies which showed the classes of System I teachers as scoring lower in student cooperativeness, involvement, and helpfulness. The ESES, on the other hand, measures student perceptions and there may well be a difference between Involvement as measured by Alpha press and by Beta press. The ESES variable of Involvement may measure the student's feeling of involvement and belonging in the classroom, rather than physical involvement, the apparent focus in the Harvey study. Thus, one possible conclusion is that students' feelings of Involvement and belongingness in the classroom are not related to the teacher's conceptual system.

The findings regarding teacher conceptual systems and total positive responses by students on the ESES failed to show significant differences but did suggest a trend. The hypothesis that System IV teachers would have

more positive responses by students on the ESES than teachers with other systems was based on both the empirical findings of Harvey and his associates (Harvey, 1966, 1968) showing System IV teachers scoring higher in a large number of categories, and the hypothesis of Joyce and Hunt (1967) that these teachers are more likely to be able to select from a wide repertoire of behaviors those which are most appropriate for the student in a particular situation. The absence of significant differences in the present study dictates against any conclusion in support of the Joyce and Hunt hypothesis, but the trend reflected in the higher mean score for System IV teachers suggests that System IV teachers may be meeting the needs of more students and that further inquiry is warranted.

The finding of significant differences between the perceptions of the classroom educational environment of students who were similar to their teacher in conceptual system and those who were dissimilar for five of the six environmental variables and for total positive responses leads to the conclusion that there is a significant positive relationship between student-teacher conceptual system similarity and positive student perceptions of the classroom environment. The results of the ω^2 test suggest a particularly strong relationship between the total positive responses on the ESES and the match or mismatch of students and teacher.

Finally, an overview of the findings for the present investigation suggests one additional conclusion. Only two of the environmental variables showed significant differences between teachers with the varied conceptual systems, while there were significant differences between the matched and mismatched groups of students for all but one of the variables. Additionally, the results of the ω^2 procedure indicated larger degrees of association between student perceptions of the classroom environment and student-teacher match or mismatch than between student perceptions of the classroom environment

and teacher conceptual system. This leads to the tentative conclusion that the match or mismatch of student and teacher is more significant in determining student perceptions of the environment than is the teacher conceptual system per se. Again, however, further experimental research will be needed to determine whether such a cause and effect relationship definitely exists.

Given these conclusions, there are numerous possibilities for further research related to the findings of this study. The study provides additional evidence of the value of using student perceptions of the educational environment and also complements the earlier work by Hunt, Joyce, and Harvey which employed perceptions of the environment by outside observers in studying the relationship of classroom environment to conceptual systems. There is a need, however, to bring both Alpha and Beta press perceptions together in the same study to determine whether outside observers and students perceive classroom environment variables such as Involvement and Autonomy in similar fashions. This would provide valuable data concerning similarities and differences which would be helpful in later studies utlizing Alpha press and/or Beta press feedback.

Continued research into the relationship of student-teacher conceptual system matching to other variables is needed. The present study showed the value of examining the relationship of student perceptions of the classroom environment and studies by McLachlan (1969) and Tomlinson (1969) have explored the relationship to student achievement. More studies are needed, however, concerning the relationship of student-teacher conceptual system matching to various aspects of student affective and cognitive growth. In particular, longitudinal studies are needed to provide data on the long range effects of such matching.

The present study has additional implications for the design of experimental studies inquiring into relationships between teacher personality characteristics, such as conceptual systems, and the classroom environment. In their research Hunt and Joyce equate environment with instructional form. It should not be surprising that they discovered relationships between teacher conceptual systems and "environment", since we can generally expect one's personality to influence one's behavior. The present study used a broader definition of environment and placed increased emphasis on student behavior within the classroom. The findings of relationships between teacher conceptual systems and the classroom environment thus take on increased power. Therefore, it is recommended that the experimental studies utilize a definition of classroom environment similar to the one used in this study and instrumentation which measures environment accordingly. Additionally, it is recommended that both Alpha press and Beta press assessment be used to provide as broad a perspective as possible in measuring the environment.

There was not attempt in the present study to inquire into the relationship between student conceptual systems and the classroom educational environment. One teacher, interviewed after completing the TIB test, indicated that his class had been together as a group for four years and had "brought their environment with them." Whether true or not, his comments serve as a reminder that students may play a major role in shaping the classroom environment and may influence teacher behavior. Too often the assumption is made that the teacher is the one who determines the classroom environment; the role of the student is neglected. Inquiry into the relationship between student characteristics, such as conceptual systems, and the classroom environment is needed.

Finally, the finding that students whose conceptual systems are similar to their teacher's perceived the classroom environment far more positively than students who were dissimilar suggests that greater attention should be given to the careful matching of students and teachers by public schools. The assignment of students and teachers to classes rarely includes an examination of teacher and student characteristics and needs. It should. Student perceptions of the environment are likely to determine their attitudes and behavior. This in turn will influence their achievement. Thus, the conceptual system match or mismatch, which is significantly related to these perceptions, must be given careful consideration. This does not necessarily mean that System I students should always be matched with System I teachers. Although that might be advisable where the most positive student perceptions of the environment appear likely to promote achievement, it would be inadvisable where dissonance between student and teacher systems would most likely promote achievement (see Hunt, 1970). In either case, however, the conceptual systems of students and teachers would be considered in making the decision.

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